



**U.S. Department of Energy**  
**Office of River Protection**

**P.O. Box 450**  
**Richland, Washington 99352**

02-OSR-0174

Mr. Ron F. Naventi, Project Manager  
Bechtel National, Inc.  
3000 George Washington Way  
Richland, Washington 99352

Dear Mr. Naventi:

**CONTRACT NO. DE-AC-01RV14136 – INSPECTION REPORT IR-02-004 – ON-LOCATION  
INSPECTION REPORT FOR THE PERIOD FEBRUARY 25 THROUGH APRIL 11, 2002**

This letter forwards the results of the Office of Safety Regulation (OSR) inspection of the Bechtel National, Inc. (BNI) waste treatment plant (WTP) construction performance for the period February 25 through April 11, 2002. The inspection identified one Finding, which is documented in the Notice of Finding (Enclosure 1).

This inspection was the first of OSR's planned continuous on-location inspection coverage of BNI construction activities. During this inspection period, BNI construction was limited to the work authorized under the ORP Limited Construction Authorization Agreement. The inspection identified improvement in control of important-to-safety (ITS) soil testing and compaction activities and other related work. The construction organization's first emergency preparedness drill was well performed, and good radiological control practices were noted during conduct of radiographic testing. Industrial Health and Safety oversight performance continued to be good.

Details of the inspection, including the Finding, are documented in the enclosed inspection report (Enclosure 2). The Finding resulted from BNI's failure to require coating of firewater system bolted accessories in procedures or technical specifications or to coat the accessories prior to burying the piping as required by BNI's Safety Requirements Document (SRD). Failure to coat buried bolting accessories is a concern because of potential corrosion of the accessories during the life of the WTP.

You are requested to provide a written response to the Finding within 30 days, in accordance with the instructions provided in the Notice of Finding. If you have any questions regarding this inspection, please contact me or Pat Carrier of my staff, (509) 376-3574.

Mr. Ron F. Naventi  
02-OSR-0174

Nothing in this letter should be construed as changing the Contract, DE-AC27-01RV14136. If in my capacity as the Safety Regulation Official, I provide any direction that your company believes exceeds my authority or constitutes a change to the Contract; you will immediately notify the Contracting Officer and request clarification prior to complying with the direction.

Sincerely,

Robert C. Barr  
Safety Regulation Official  
Office of Safety Regulation

OSR:JWM

Enclosures

cc w/encls:  
W. R. Spezialetti, BNI

## NOTICE OF FINDING

Section C, "Statement of Work," Standard 7, "Environment, Safety, Quality, and Health," of Contract DE-AC27-01RV14136, dated December 11, 2000, between Bechtel National, Inc. (the Contractor) and the U.S. Department of Energy (DOE), defined the Contractor's responsibilities under the Contract as they relate to conventional non-radiological worker safety and health; radiological, nuclear, and process safety; environmental protection; and quality assurance.

Standard 7, Section (d) of the Contract requires the Contractor to develop and implement an integrated, standards-based, safety management program to ensure that radiological, nuclear, and process safety requirements are defined, implemented, and maintained. The Contractor is required to conduct work in accordance with the Contractor developed and DOE approved Safety Requirements Document (SRD).

24590-WTP-SRD-ESH-01-001-02, Revision 0a "Safety Requirements Document Volume II," Safety Criterion 4.5-17, states "The fire protection program shall ensure fire protection requirements are documented and incorporated in the plans and specifications for all new facilities and significant modifications of existing facilities. This includes a documented review by a qualified fire protection engineer of plans, specifications, procedures, and acceptance tests." The implementing code section of Safety Criterion 4.5-17 requires conformance to NFPA 801-95, *Standard for Facilities Handling Radioactive Materials*.

During performance of an inspection of the backfilling of firewater piping system in Area 31, conducted March 14, 2002, at the Waste Treatment Plant (WTP) construction site, the Office of Safety Regulation (OSR) identified the following:

NFPA 801-95, paragraph 4-2.1.3, states in part, "The fire protection water supply system shall be arranged in conformance with NFPA 24, *Standard for the Installation of Private Mains and Their Appurtenances*." NFPA 24-95 Paragraph 8-5.2, states "All bolted joint accessories shall be cleaned and thoroughly coated with asphalt or other corrosion-retarding material after installation."

Contrary to the above, during performance of backfilling operations, the OSR identified the Contractor's specification 24590-BOF-3PS-PZ41-T0001, Underground Fire Protection Piping Mains, Revision 1, dated September 19, 2001, did not have a requirement to coat bolted joint accessories, and the Contractor's personnel had backfilled portions of the fire protection piping in Area 31 without the bolted joint accessories being coated.

The failure to specify the requirement for coating of bolted accessories in procedures or technical specifications or implement the requirement to coat the accessories is considered a Finding of nonconformance with the requirements of SRD, Safety Criteria 4.5-17. (See IR-02-004, Section 1.6.2, IR-02-004-03-FIN)

The OSR requires the Contractor to provide, within 30 days of the date of the cover letter that transmitted this Notice, a reply to this Finding. The reply should include (1) admission or

denial of the alleged Finding, (2) the reason for the Finding, if admitted, and if denied, the reason why, (3) the corrective steps that have been taken and the results achieved, (4) the corrective steps that will be taken to avoid further Findings, and (5) the date when full compliance with the applicable commitments will be achieved. When good cause is shown, consideration will be given to extending the requested response time.

U.S. DEPARTMENT OF ENERGY  
Office of River Protection  
Office of Safety Regulation

INSPECTION: On-location Inspection Report for the Period February 25 through April 11, 2002

REPORT NO: IR-02-004

FACILITY: Bechtel National, Inc.

LOCATION: 3000 George Washington Way  
Richland, Washington 99352

DATES: February 25 through April 11, 2002

INSPECTORS: J. McCormick-Barger, Sr. Regulatory Technical Advisor, Inspection Lead  
J. Polehn, Senior Regulatory Technical Advisor  
D. Kirsch, Consultant  
M. Evarts, Flour Hanford Acceptance Inspector  
H. Doan, Flour Hanford Acceptance Inspector  
J. Mohatt, Consultant

APPROVED BY: P. Carier, Verification and Confirmation Official  
Office of Safety Regulation

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## EXECUTIVE SUMMARY

On-location Inspection Report for Period of February 25 Through April 11, 2002  
Inspection Report Number IR-02-004

## INTRODUCTION

This inspection of Bechtel National, Inc. (the Contractor) construction activities covered the following specific areas:

- Adequacy of the Contractor's Assessment of Readiness to Conduct Forms, Reinforcing Steel, and Embedment (FRE) Construction (Section 1.2)
- Adequacy of FRE Construction Implementing Procedures (Section 1.3)
- Observation of Backfill and Compaction Activities (Section 1.4)
- Observation of Materials Testing Activities (Section 1.5)
- Observations of Fire Protection System Construction Activities (Section 1.6)
- Observations of Industrial Health and Safety Construction Activities (Section 1.7)
- Observations of a Construction Emergency Preparedness Drill (Section 1.8)
- Observations of Radiography Radiological Controls (Section 1.9)
- Follow-up on Occurrence Reports and Inspection Items (Section 1.10)

## Significant Observations and Conclusions

- The Contractor's assessment of readiness to proceed with FRE construction activities was thorough and provided a supportable basis for concluding construction was ready to proceed with this activity. (Section 1.2)
- Contractor procedures for FRE construction activities addressed Authorization Basis and regulatory requirements. Field storage and control of important-to-safety (ITS) reinforcement steel was implemented adequately in accordance with the Field Materials Management procedure. (Section 1.3)
- The Contractor's ITS LAW and PT building foundation excavation, backfill, and compaction procedures, technical specifications, and work instructions contained the appropriate requirements from codes and standards, and observed work was being performed in accordance with these documents and requirements. (Section 1.4)
- Testing associated with structural soil back filling and proof rolling of High Level Waste (HLW), LAW, and PT building foundations were performed in accordance with Contractor and subcontractor established requirements and procedures. Procedures reviewed met applicable standards. (Section 1.5)
- The firewater hydrostatic test procedures conformed to NFPA 24 requirements, a pre-job briefing was conducted effectively, the test package contained appropriate information, and testing was conducted in accordance with the established requirements. However,

backfill of the firewater piping system was not performed in accordance with requirements. A Finding was identified for the failure to specify in procedures and apply a corrosion resistant coating to bolted joint accessories prior to burying them as required by NFPA 24 (IR-02-004-03-FIN). (Section 1.6)

- Properly trained and motivated personnel and infrastructure were in place and functioning to provide a sound equipment safety program for construction operations. The additional level of inspection and assessment rigor practiced in the Contractor's Hoisting and Rigging activities demonstrated a recognizable method to enhance construction accident prevention. The Contractor's powered industrial truck and vehicle safety programs and implementation met the requirements of ORP-440.1-2. (Section 1.7)
- The Contractor successfully conducted an emergency preparedness evacuation drill at the WTP construction site. Emergency Response Organization staff performed well and worker accountability was achieved within 30 minutes of initiation of the evacuation alarm. The post drill critique was thorough and the critique report captured significant issues and lessons learned. (Section 1.8)
- Based on limited review of the procedure and radiography activities, the subcontractor had appropriate written and approved implementing procedures for performing radiography that met the Contractor's Radiation Protection Program requirements. (Section 1.9)
- The Contractor adequately addressed corrective actions associated with Occurrence Report No. RP--BNRP-RPPWTP-2002-0002, *Damage to 12,000 Gallon South Water Stand Tower* and, as a result, the Office of Safety Regulation closed inspection follow-up system number INR-02-002-INR that tracked this occurrence. (Section 1.10)

**ON-LOCATION INSPECTION REPORT FOR PERIOD OF FEBRUARY 25 THROUGH  
APRIL 11, 2002**

**Table of Contents**

1.0	REPORT DETAILS.....	1
1.1	Introduction.....	1
1.2	Adequacy of the Contractor's Assessment of Readiness to Conduct Forms, Reinforcing Steel, and Embedment (FRE) Construction (Inspection Technical Procedure (ITP) I-135).....	1
1.2.1	Inspection Scope .....	1
1.2.2	Observations and Assessments .....	1
1.2.3	Conclusions.....	2
1.3	Adequacy of FRE Construction Implementing Procedures (ITP I-135 and I-113).....	2
1.3.1	Inspection Scope .....	2
1.3.2	Observations and Assessments .....	2
1.3.3	Conclusions.....	3
1.4	Observation of Backfill and Compaction Activities (ITP I-112).....	4
1.4.1	Inspection Scope .....	4
1.4.2	Observations and Assessments .....	4
1.4.3	Conclusions.....	5
1.5	Observation of Materials Testing Activities (ITP I-112).....	5
1.5.1	Inspection Scope .....	5
1.5.2	Observations and Assessments .....	5
1.5.3	Conclusions.....	6
1.6	Fire Protection System Construction Activities (ITP I-137 and I-138).....	6
1.6.1	Inspection Scope .....	6
1.6.2	Observations and Assessments .....	7
1.6.3	Conclusions.....	9
1.7	Industrial Health and Safety Construction Activities (ITP I-160).....	9
1.7.1	Inspection Scope .....	9
1.7.2	Observations and Assessments .....	9
1.7.3	Conclusions.....	13
1.8	Observation of a Construction Emergency Preparedness Drill (ITP I-160).....	13
1.8.1	Inspection Scope .....	13
1.8.2	Observations and Assessments .....	13
1.8.3	Conclusions.....	15
1.9	Adequacy and Effectiveness of Implementation of the RCP Implementing Procedures to Ensure Radiological Safety (ITP I-140).....	15
1.9.1	Inspection Scope .....	15
1.9.2	Observations and Assessments .....	15
1.9.3	Conclusions.....	16

1.10	Adequacy of Closure of Inspection Items (Inspection Administrative Procedures (IAP) A-105 and A-106) .....	16
2.0	EXIT MEETING SUMMARY .....	17
3.0	REPORT BACKGROUND INFORMATION .....	17
3.1	Partial List of Persons Contacted .....	17
3.2	List of Inspection Procedures Used .....	18
3.3	List of Items Opened, Closed, and Discussed .....	18
3.4	List of Acronyms .....	19

## **ON-LOCATION INSPECTION REPORT FOR PERIOD OF FEBRUARY 25 THROUGH APRIL 11, 2002**

### **1.0 REPORT DETAILS**

#### **1.1 Introduction**

This inspection was intended to verify the Contractor had installed engineered foundations for important-to-safety (ITS) structures and firewater piping in accordance with regulatory requirements, design documents, and approved work procedures. This inspection examined the adequacy of the Contractor's assessment of readiness to perform ITS work associated with installation of forms, reinforcing steel assemblies, and embedment for building basemats, and the conduct of construction activities in the areas of backfill and compaction, materials testing, and underground firewater piping installations. The inspectors reviewed the Contractor's implementation of certain aspects of its Industrial Health and Safety program, including observing Contractor and subcontractor worker safety practices. The inspectors also observed a construction emergency preparedness drill and radiological controls implemented when performing radiography non-destructive examination of welds on instrument air piping.

Details and conclusions regarding this inspection are described below:

#### **1.2 Adequacy of the Contractor's Assessment of Readiness to Conduct Forms, Reinforcing Steel, and Embedment (FRE) Construction (Inspection Technical Procedure (ITP) I-135)**

##### **1.2.1 Inspection Scope**

The inspectors assessed the adequacy of the Contractor's assessment of readiness to perform FRE construction activities. The inspectors reviewed the Contractor's self-assessment reports and the Contractor's analysis of deviations between actual and expected readiness levels, and interviewed Contractor management and staff.

##### **1.2.2 Observations and Assessments**

On March 19, 2002, the Contractor notified the U.S. Department of Energy, Office of River Protection (ORP) of its declaration of readiness to proceed with FRE installations (letter CCN: 030110). Attached to the letter were the Contractor's lines of inquiry documenting the assessment of readiness to proceed with installation of FRE. The assessment included a review of a broad range of areas associated with the planned activities. The lines of inquiry provided a means for the Contractor to ensure necessary activities were completed, or would be completed, before FRE construction activities could begin. For example, the Contractor had identified certain procedures that needed to be approved before reinforcing steel fabrication activities could proceed. The Contractor was proceeding with completing and closing the incomplete items in a planned schedule that was appropriate for the items identified. The inspectors examined the

scope, depth, and conclusions of the assessment and found the assessment provided a thorough analysis of and basis for concluding readiness to proceed with installation of FRE.

### **1.2.3 Conclusions**

The Contractor's assessment of readiness to proceed with FRE construction activities was thorough and provided a supportable basis for concluding construction was ready to proceed with this activity.

## **1.3 Adequacy of FRE Construction Implementing Procedures (ITP I-135 and I-113)**

### **1.3.1 Inspection Scope**

The inspectors examined the Contractor's procedures and engineering technical specifications governing the performance of concrete and reinforcing steel work to determine whether the specified activities conformed to authorization basis and specified industry standard requirements. The inspectors also examined the Contractor's field control of reinforcement steel to verify the steel was being handled and stored in accordance with Contractor material control procedures.

### **1.3.2 Observations and Assessments**

The inspectors examined the following Contractor documents governing the installation of FRE:

- 24590-WTP-3PS-D000-T0001, *Engineering Specification for Concrete Work*, Revision 0, dated 12/03/01
- 24590-WTP-3PS-DG00-T0001, *Specification for Furnishing Reinforcing Steel*, Revision 0, dated 10/5/01
- 24590-WTP-GPP-CON-3203, *Concrete Operations (Including Supply)*, Revision 0, dated 01/23/02.

From review of the procedure and technical specifications for concrete work described above, the inspectors determined FRE installation activities were appropriately specified and addressed regulatory requirements. However, although not specifically related to installation of FRE, the inspectors observed certain requirements of ACI 309R (*Guide for Consolidation of Concrete*, 1996 Edition) were not provided for in the procedure or technical specification described above. For example, ACI 309R required activities not addressed in the procedures included avoiding excessive vibration to prevent liquefaction of the fresh concrete surface, spacing the points of consolidation equipment insertion into fresh concrete to assure all of the concrete would be consolidated properly, and avoiding contacting the reinforcing steel or forms with the consolidating equipment. The Contractor was informed of these oversights and the Contractor

indicated the requirements would be included during a planned revision of the technical specification.

The inspectors discussed, with engineers and managers, the plans for the use of procedures and controlling activities related to installing FRE and structural concrete. The inspectors had observed the procedure for concrete operations, by itself, was not adequate or sufficient to assure ITS concrete would be installed as required by the Authorization Basis commitment to ACI 349, *Code Requirements for Nuclear Safety Related Concrete Structures*, 2001 Edition. The Contractor stated the intent that together, the procedure and Technical Specification for concrete work, would assure conformance with the Authorization Basis requirement. Field Engineers, preparing the work packages to accomplish concrete installation, were responsible for reviewing the industry standards referenced by the Authorization Basis commitment and including any requirements not already accounted for into the work package instructions. This requirement was specified in procedure 24590-WTP-GPP-CON-1201, *Construction Work Package*, Revision 0, dated 9/28/01. As discussed above, the Contractor had previously determined a need to conduct a systematic review of the engineering technical specifications related to concrete activities to assure the applicable requirements of the standards governing concrete installation activities would be included in the engineering technical specification so, together, work packages, procedures, and specifications would provide assurance concrete activities would be conducted as required by ACI 349. Follow-up of the Contractor's actions to ensure ITS FRE concrete technical specification, construction procedures, and work packages adequately address requirements will be tracked as an inspection follow-up item (IR-02-004-01-IFI).

The inspectors examined the ITS reinforcing steel issued to the site for construction and observed that the bundles were acceptably tagged, documenting the completion and acceptance of the bundles by quality control, and stored on dunnage to prevent contact with the ground in accordance with procedure 24590-WTP-GPP-GCP-00100B, *Field Materials Management*, Revision 0, dated 2/20/02. The inspectors observed the Contractor was in process of installing the machinery to cut and bend reinforcing steel and was informed the machinery had not yet been tested and qualified for use in bending ITS reinforcing steel. The inspectors determined the Contractor had not yet approved procedures for qualifying the bending machinery, operating the bending machines, and inspecting the bent bars. The Contractor had not yet trained people to operate the machines or inspect the bent bars.

### **1.3.3 Conclusions**

The inspectors concluded the procedures and specification for installation of FRE addressed required codes and standards. The Contractor planned to perform additional reviews before these documents would be suitable for concrete placement. Field storage and control of ITS reinforcement steel was being adequately implemented in accordance with the Contractor's Field Materials Management procedure.

## **1.4 Observation of Backfill and Compaction Activities (ITP I-112)**

### **1.4.1 Inspection Scope**

The inspectors examined the Contractor's procedures and preparations for performing sub-base soil work for the LAW soil foundation and examined the backfill and compaction work performance for the LAW and Pretreatment (PT) building foundations.

### **1.4.2 Observations and Assessments**

During a previous inspection in this area, documented in inspection report IR-01-010, the OSR identified the Contractor had not provided adequate implementing procedures specifying the method to be employed in the field to verify loose fill lift thickness conformed to established requirements. An inspection Finding had been identified (Finding IR-01-010-01-FIN). To address this and other self-identified quality issues regarding backfill and compaction activities, the Contractor placed the related subcontractor under the Contractor's Quality Assurance program, and developed revised procedures, specifications, and work packages to accomplish the work. The Contractor also assigned a full-time field engineer and quality control inspector to this ITS work to ensure adequate controls were implemented.

The inspectors examined the following documents governing the conduct of excavation, backfill, and compaction of the PT and LAW building foundations:

- 24590-BOF-3PS-CE01-T0001, *Technical Specification for Excavation and Backfill*, Revision 2, dated 2/13/02
- PTF/C/E/1000, *Contractor's Work Package for Pretreatment Facility-Backfill Subgrade to Mudmat*.

The inspectors verified the above Contractor's documents referenced the proper codes and standards to accomplish the specified work.

The Contractor established a practice of performing a training session and dry run prior to performing ITS activities. The inspectors observed the training and dry run conducted in preparation for performing the soil sub-base proof rolling for the LAW soil foundation, in preparation for placing the mudmat, and for the backfill and compaction activities for the PT building foundation. The inspectors found the training session provided a good overview of the activities to be conducted and discussed the important quality aspects relevant to the work. The dry run was a good test for laying out the grids to assure soil sampling for testing was performed at the required frequency and coverage. The dry run process provided an opportunity to ask questions about the process and several improvements were suggested by the attendees. For example, several improvements in earthwork instruction detail and thoroughness were identified and addressed by the Contractor.

The inspectors observed the conduct of the compaction controls of the top 12 inches of the exposed LAW subgrade and the east end of the PT facility subgrade and concluded the work had

been performed in accordance with the requirements of the work package and the applicable technical specification. In addition, the inspectors observed the conduct of structural backfilling and compaction of the east end of the PT facility soil foundation and concluded the work was performed in accordance with the procedures and technical specifications.

### **1.4.3 Conclusions**

The inspectors verified the Contractor's ITS LAW and PT building foundation excavation, backfill, and compaction procedures, technical specifications, and work instructions contained the appropriate requirements from codes and standards, and observed work was being performed in accordance with these documents and requirements.

## **1.5 Observation of Materials Testing Activities (ITP I-112)**

### **1.5.1 Inspection Scope**

The inspectors examined the Contractor's and subcontractor's programs and procedures governing the conduct of material testing activities, field engineering and quality control training and certification records, construction work documents, and field performance of materials testing activities for the backfilling of Test Pit 31 (an ITS activity), and HLW and LAW building foundations.

### **1.5.2 Observations and Assessments**

During the previous inspection in this area (See IR-01-010), the OSR concluded the materials testing subcontractor had not implemented adequate measures to assure the results of testing were recorded on established test record forms as the testing was accomplished; had not assured clearly approved testing procedures were included in the construction work order and release documentation; had not provided the Contractor with timely notification of nonconforming test results (a Contractor identified issue); and had not submitted the original records of non-ITS testing to project document control. As a result, the Contractor had placed a hold on any ITS material testing.

During this inspection period, the Contractor and subcontractor took effective actions to address the issues described above and after verifying the subcontractor addressed and closed a number of Corrective Action Reports, the Contractor released the subcontractor to perform ITS material testing. The inspectors observed substantial Contractor field engineering and quality control oversight of sub-contractor testing to ensure testing met standards.

The inspectors reviewed the test labs procedure P-D-1556-00, dated 12/7/01, Issue No. 2 Revision No.1, *Obtaining the In-place Density and Water Content of Soil by the Sand Cone Method*, and procedure P-D-2922-96, dated 12/7/01, Issued No.2 Revision No.2, *Obtaining the In-place Density and Water Content of Soil by Nuclear Equipment*. The inspectors concluded the procedures addressed the applicable standards.

The inspectors reviewed field copies of the Sieve Analysis and Moisture-Density Curves supplied by the subcontractor's test lab for samples obtained from the LAW sub-grade. These reports had not been officially transmitted from the test lab to the Contractor. The inspectors verified a minimum of 4 points were performed per ASTM D1557 (*Standard Test Method for Laboratory Compaction Characteristics of Soils Using Modified Effort.*) The inspectors concluded the field copies of the reports met the required standards for laboratory testing. As stated in Section 1.4.2 above, the inspectors observed the conduct of the compaction control (proof-roll) of the top twelve (12) inches of the exposed LAW Sub-grade. During testing of the sub-grade, nuclear density tests that fell below the required percent compaction were noted as failed tests on the In Place Density Test Report, and rework was performed by the applicable subcontractor and a retest of the failed density test was noted. Retest areas were subsequently found to be acceptable. Results of sand cone testing, required at intervals of one for each 10 nuclear tests, were being processed through the lab; final reports were not available at the end of this inspection period.

The inspectors observed sub-grade testing of the top twelve (12) inches of the exposed over excavated (East end) PT building sub-grade after proof-roll. Again, nuclear density tests that fell below the required minimum percent compaction were noted as failed test on the In Place Density & Moisture Test Report, the soil was reworked by the applicable subcontractor, and retested. Retests were noted on the test report. The material testing subcontractor subsequently obtained acceptable density readings. As with the LAW sub-grade work, final sand cone testing results were not yet available.

The inspectors observed the conduct of structural backfilling of the over excavated area (East end) PT foot print, drawing 24590-PTF-DO-S13T-0001 Revision 0, dated 12/20/01. During testing of the structural backfill, tests that fell below the required minimum percent compaction were noted as failed tests on the In Place Density & Moisture Test Report, reworked by the subcontractor, and noted as a retest of the failed test. The inspectors verified retested areas were found by the testing subcontractor to be acceptable. Result of sand cone testing and any additional proctor results had not been processed and were not available from the lab.

### **1.5.3 Conclusions**

Testing associated with structural soil back filling and proof rolling of HLW, LAW, and PT building foundations were being performed in accordance with Contractor and subcontractor established requirements and procedures. Procedures reviewed met applicable standards.

## **1.6 Fire Protection System Construction Activities (ITP I-137 and I-138)**

### **1.6.1 Inspection Scope**

The inspectors examined the Contractor's procedures for conducting hydrostatic testing of a portion of the fire protection system piping, observed the conduct of hydrostatic testing, examined records documenting test results, and verified acceptable restoration of the tested system.

### 1.6.2 Observations and Assessments

During a previous inspection, hydrostatic testing of observed portions of firewater piping had failed twice before due to joint leakage and the movement of a thrust block (for details see inspection report IR-01-010, Section 1.5.2). During this inspection period, the inspectors observed the third attempt to conduct an acceptable hydrostatic test of this section of firewater piping.

The inspectors examined the Contractor's procedure 24590-BOF-3PS-PZ41-T0001, *Underground Fire Protection Piping Mains*, Revision 1, dated 9/19/01, for conformance with the hydrostatic testing requirements of National Fire Protection Association (NFPA) 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, 1995 Edition. This standard was required per Safety Requirement Document (SRD) Safety Criterion 4.5-1.7. This Safety Criterion identified NFPA 801-95, *Standard for Facilities Handling Radioactive Materials*, as the Implementing Code and Standard and NFPA 801-95 required NFPA 24 to be used to test underground piping. The inspectors concluded the procedure implemented the NFPA specific requirements for hydrostatic testing.

The inspectors observed the Contractor's conduct of the pre-job briefing, which covered the test boundary, test sequence, job hazards, and rules for entry to the test area. The inspectors concluded the Contractor's pre-job briefing provided test personnel with the necessary information to effectively and safely conduct the hydrostatic test.

The inspectors examined the Contractor's test package (24590-WTP-PTR-P-02-0001, Revision 3) and verified the test boundary was specified, valve line-ups were thorough, and all required test parameters had been specified. The inspectors determined the calibration sticker for the pressure gauge used to verify hydrostatic test pressure, serial number TG-004, was calibrated on 12/1/01, with an expiration date of 6/4/02. The gauge range was 0 to 600 psi, which was an acceptable range for the hydrostatic test pressure of 235 psi.

The inspectors observed the conduct of the hydrostatic test on a portion of the firewater piping in Area 31 (drawing 24590-BOF-C2-C12T-00031, *Firewater, Potable Water Plant Service Air Yard Utility Composite Plan – Area 31*, Revision 0, dated 9/24/01.) The inspectors concluded the hydrostatic test had been conducted in accordance with the Contractor's established requirements and NFPA 24. The inspectors found the piping system test conformed to established requirements regarding leakage and time at pressure.

The inspectors reviewed the training records for the test crew and found, with one exception, they were trained to the above test procedure and applicable installation and technical specifications. The exception regarded the training for the Piping Area Superintendent. The Piping Area Superintendent's training records did not indicate he had read Technical Specification 24590-BOF-3PS-PZ41-T0001, *Underground Fire Protection Piping Mains*. Work Package P-BOF-C1-930-001, *Firewater Piping in BOF Area C1*, the work package applicable to the firewater piping being tested, listed this specification, procedure 24590-WTP-GPP-CON-3502, *Underground Piping Installation*, and several drawings as the documents needed to install the firewater piping. Step 3.1.2 of procedure 24590-WTP-GPP-CON-3502, Revision 0, dated 10/19/01, stated the responsible superintendent, or designee, is responsible for installing pipe in

accordance with design documents. Without being required to read the technical specification discussed above, the Piping Area Superintendent may not have been aware of all the design requirements associated with firewater installation. Late in the inspection period, the inspectors discussed this issue with senior construction management. Because work packages reviewed to date tended to rely heavily on technical specifications to communicate installation design requirements, the inspectors were concerned with the generic implications of not requiring superintendents to read applicable technical specifications. To allow time for construction management to research this issue and provide their position on superintendent training requirements, this issue will be tracked as Inspection Follow-up Item IR-02-004-02-IFI.

The inspectors observed backfilling of the completed firewater piping system that was tested to verify the bolted joints were coated as required by NFPA 24. The inspectors concluded the Contractor had not coated the bolted joints as required by NFPA 24 and procedure 24590-BOF-3PS-PZ41-T0001 did not sufficiently provide the requirement for coating bolted joints. As stated above, the Implementing Codes and Standards for SRD, Safety Criteria 4.5-17, concerning the requirement to document fire protection requirements in procedures and specifications, included NFPA 801-95, *Standard for Facilities Handling Radioactive Materials*. NFPA 801-95, Paragraph 4-2.1.3, required the firewater system to be installed in accordance with NFPA 24. NFPA 24, Paragraph 8-5.2, required bolted joints accessories to be coated with asphalt or other corrosion-retarding material after installation. Failure to specify the coating of bolted accessories in procedures or technical specifications or coat the accessories is considered a Finding of nonconformance with SRD, Safety Criteria 4.5-17 (IR-02-004-03-FIN).

During observation of backfilling, the inspectors observed the drainage rock around the firewater hydrants were not being installed as required by drawing 24590-BOF-C2-C12T-00034, *Firewater, Potable Water, Plant Service Air Yard Utility Details*, Sheet 2, Detail 1, Revision 0, dated 3/12/02. The inspectors determined the Contractor had installed the fire hydrant drain rock incorrectly by wrapping the polyethylene sheet around the drain rock instead of on top of the drain rock as detailed in the drawing. Once the inspectors brought this to the Contractor's attention, a Noncompliance Report (NCR) was written (24590-WTP-NCR-CON-02-023, dated 3/20/02). The condition was corrected for firewater piping buried near the construction warehouse. Hydrant drainage rock located near the concrete batch plant was also documented as being deficient but not yet corrected. Because this issue met the non-cited Finding criteria in Inspection Administrative Procedure A-105, *Inspection Performance*, a Finding was not issued. Specifically, the issue was not programmatic, was entered into the Contractor's corrective action program, and the specific issue was corrected or to be corrected in a timely or otherwise appropriate manner.

During review of the fire hydrant drain rock installation, the inspectors observed a general note on drawing 24590-BOF-C2-C12T-00031 stated, "For general notes and reference drawings, and DIM information see drawing 24590-BOF-C2-C12T-00013." Drawing 24590-BOF-C2-C12T-00013, *Firewater, Potable Water, Plant Service Air Yard Utility Composite Plan – Area 13*, Revision 0, dated 9/24/01, general note 15 stated "For firewater details see drawing 24590-BOF-C2-FPW-00002." Drawing 24590-BOF-C2-FPW-00002 had been removed from the controlled drawing stick in the field. From discussions with engineering and Project Document Control (PDC), the inspectors learned drawing 24590-BOF-C2-FPW-00002 was to be voided through Revision 1, which in-turn was to referred the reader to new drawing 24590-BOF-C2-C12T-

00034 for details. However, as stated above, drawing 24590-BOF-C2-FPW-00002, Revision 0, was removed from the controlled stick and new drawing 24590-BOF-C2-C12T-00034 was issued before Revision 1 to drawing 24590-BOF-C2-FPW-00002 was issued. The inspectors were informed this error was subsequently corrected and a Corrective Action Request (CAR) was written (24590-WTP-CAR-02-067, dated 4/2/02) to document actions to ensure similar drawing issue sequencing errors did not recur. Because this issue also met the non-cited Finding criteria discussed above, in that it was not programmatic, the issue was entered into the Contractor's corrective action program, and the specific issue was corrected in a timely manner, no Finding was cited.

### **1.6.3 Conclusions**

The firewater hydrostatic test procedures conformed to NFPA 24 requirements, a pre-job briefing was conducted effectively, the test package contained appropriate information, and testing was conducted in accordance with the established requirements. However, backfill of the firewater piping system was not performed in accordance with requirements. A Finding was identified for the failure to specify in procedures and apply a corrosion resistant coating to bolted joint accessories prior to burying them as required by NFPA 24.

## **1.7 Industrial Health and Safety Construction Activities (ITP I-160)**

### **1.7.1 Inspection Scope**

The inspection in this area focused on the Contractor's implementation of the Contract specified industrial health and safety requirements described in Office of River Protection Manual (ORP M 440.1-2, *Industrial Hygiene and Safety Regulatory Plan for the Waste Treatment Plant Contractor*.) Specifically, the inspectors assessed compliance to the requirements of the Contractor's *Non-Radiological Worker Safety and Health Plan for the River Protection Project-Waste Treatment Plant*, ISO 0001, which had been reviewed and approved by the OSR, along with applicable requirements specified in ORP M 440.1-2. Areas reviewed included the Hoisting and Rigging, Powered Industrial Trucks, and Motor Vehicle Safety.

### **1.7.2 Observations and Assessments**

#### **1.7.2.1 Hoisting and Rigging**

The inspectors examined the Contractor's implementation of the following hoisting and rigging procedures:

- 2450-WTP-GPP-SIND-016, *Cranes and Operations*, Revision 0
- 24590-WTP-GPP-CON-1901A, *Crane Use and Operations*, Revision 0
- 24590-WTP-GPP-SIND-018A, *Crane Load Test*, Revision 0
- 2450-WTP-GPP-SIND-017, *Crane Operator Qualification*, Revision 0
- 24590-WTP-GPP-CON-2301, *Construction Tools and Equipment*, Revision 0.

The inspectors found these procedures acceptably implemented the applicable requirements of ORP M 440.1-2. The inspectors also reviewed applicable Safety Task Analysis Risk Reduction Talk (STARRT) cards for hoisting and rigging activities for March 13, 17, and 18, 2002, and found the Contractor acceptably implemented the applicable requirements of ORP M 440.1-2. The inspectors discussed several phases of the crane safety program with responsible Contractor staff, including development of procurement criteria, vendor performance, receipt inspections, rigging plan development, functional load testing, maintenance, operational inspections, and operator qualifications. During the initial discussions, the inspector reviewed crane inspection reports, critical lift plans, crane operator qualification data, and site construction hoisting and rigging related procedures.

Based upon the above activities and field inspections, the inspectors determined, with one exception concerning a subcontractor crane located at Pit # 30, the above referenced Contractor procedures were being acceptably implemented. Subcontractors were implementing appropriate Contractor requirements in this area. For example, a crane inspection report, dated 1/22/02, documented the Contractor had performed a comprehensive inspection of a newly received crane, found a damaged boom lacing, and ensured the vendor repaired the damage prior to placing the crane in service. Another crane inspection report, dated 02/11/02, documented the Contractor had inspected a mobile crane brought on-site by a subcontractor and found it had numerous safety related defects, even though the crane had received a third party inspection by a crane inspection firm prior to being brought on-site. Documentation demonstrated this crane was removed from the site before it was mobilized for use.

The inspectors observed the Contractor unloading (by a mobile crane), bundles of rebar from a train car in the North Richland-Port of Benton property (the Contractor's Marshaling Facility). The inspectors interviewed an ironworker and the crane operator and inspected the crane cab and the information required to be in the crane cab, such as the operating manual and the load charts. The operators were knowledgeable and responded to inspector questions in a manner that reflected current knowledge of Contractor's operating procedures. The crane cab was clean and contained all required data.

The inspectors found a mobile crane, used at Pit # 30 by a subcontractor, that had not been subjected to the requirements of the Contractor's procedures involving operator on-site evaluation, rigging plans, functional load testing, and inspection criteria. The subcontractor and the Contractor informed the inspector, the crane had received a third party inspection prior to mobilization and the operator was certified. Contractor's procedures also require all operating engineers pass a written and operational test when they arrive at the WTP site, prior to being allowed to operate equipment. This testing requirement was in addition to the certification of completion the worker had gained from another testing/training firm and had not been administered to the operator.

The inspectors observed the Contractor's procedures exceed the necessary requirements of ORP-M 440.1-2. The enhancements included within the Contractor's procedures, however, were required by the procedure to be applied to every WTP site hoisting and rigging operation. Accordingly, the inspector concluded the Pit # 30 subcontractor did not conform to the Contractor's procedures. The inspectors discussed this conclusion with Contractor staff. As a

result, after determining the crane did not meet Contractor standards, the Contractor initiated removal of this Pit #30 crane and replaced it with a crane owned and operated by the Contractor.

The inspectors examined WTP site construction operations, procedural compliance, and pre-job planning associated with rigging activities to determine whether the Contractor was complying with the applicable safety and health requirements of ORP M 440.1-2. Further, the inspectors evaluated the storage, condition, and maintenance of the rigging equipment such as, shackles, slings, fittings, etc. The inspectors determined the Contractor acceptably implemented applicable requirements of ORP M 440.1-2 in the performance of pre job lift planning and the maintenance and care of rigging equipment.

The Contractor's rigging program required quarterly color-coding of rigging equipment for the equipment used by Contractor direct-hire personnel. However, the inspectors determined this requirement did not apply to subcontractors. The subcontractor interviewed by the inspectors had a similar program. The inspectors observed one piece of rigging, belonging to a second tier subcontractor, which was damaged. The Contractor and subcontractor safety personnel subsequently removed that piece of equipment from service.

The Contractor maintained certificates of conformance and/or proof load tests for all slings. This documentation was not required of subcontractors. However, subcontractor rigging equipment observed, had the rated capacity clearly identified with affixed labels or tags.

The inspectors examined two areas used to store rigging, observed the preliminary rigging in preparation for lift in the compressed air trench, and examined several STARRT cards the applicable *Construction Tools and Inspection* procedure. The inspectors concluded the Contractor had acceptably conformed to the applicable requirements of ORP M 440.1-2 in this area.

#### **1.7.2.2 Powered Industrial Trucks**

The inspector inspected the condition of two forklift trucks at the Marshaling Facility. Further, the inspector reviewed the STARRT cards for warehouse operation and interviewed the laborer foreman. Neither of the forklift trucks was in operation during the time of the inspection. Both trucks were new (less than 200 hours.) However, a portion of the rear window of one forklift was very dirty to the point rear vision could be obscured. The Contractor subsequently cleaned the window.

The inspector examined operator training records and certificates with the Foreman. The operators were certified and met the requirements of ORP M 440.1-2.

STARRT cards, initiated the day of the inspection, and appropriate operational safety issues were noted and discussed at the pre-job meeting. Powered Industrial Truck operations were found to acceptably meet the requirements of ORP M 440.1-2.

### 1.7.2.3 Motor Vehicle Safety

The inspectors evaluated the Contractor's motor vehicle safety program (light vehicles). The elements of this program were evaluated against the requirements of ORP M 440.1-2. The inspectors interviewed the Contractor's Safety and Health Specialists and the Industrial Safety Manager. The inspector reviewed procedure 24590-WTP-GPP-SIND-030-0, *Vehicle and Heavy Equipment Safety*, the Contractor's Lesson Plan for Vehicle Safety, dated 2/08/02, and the attendance rosters for those personnel who had received the formal training in vehicle safety. Further, the inspectors reviewed the *Bechtel Driving Handbook*, which was an undated corporate policy manual for drivers.

The inspectors discussed the motor vehicle safety program with responsible Contractor personnel and determined the Contractor presently had approximately 25 light vehicles in their fleet. The Contractor anticipated the fleet size would grow with the employee population. The inspectors were informed no reportable vehicle accident had occurred since the Contractor's mobilization. The inspectors were further informed no "near miss" incidents had occurred involving vehicles and 50% of the Contractor's vehicle drivers/operators have been formally trained in vehicle safety by the Contractor's Safety and Health Specialist. Based upon the document review and interviews, the inspectors determined the Contractor was acceptably implementing the applicable requirements of ORP M 440.1-2.

The Contractor informed the inspectors they would formally train all operators. The integration of above referenced training program was through integration of the corporate procedures and the corporate requirements. The inspectors observed a series of safety training sessions including motor vehicle safety, fall protection, and confined space entry. The inspector's determined the classes captured the essential and required elements of each subject area using relevant examples. The attendees posed relevant questions that were appropriately answered by the instructors. The Contractor's procedural requirements were covered in a professional and informative manner. The inspectors determined the instruction acceptably covered applicable requirements of the Contractor's procedures and policies regarding Motor Vehicle Safety.

The inspectors determined the vehicle safety program and implementation acceptably met the requirements of ORP M 440.1-2.

### 1.7.2.4 Other Safety and Health Issues

During the course of this inspection, the inspectors noted concerns or evaluated performance in some other areas that were outside the scope of the focus areas described above. These areas included fall protection and warehousing practices.

- The inspectors suggested the Contractor evaluate the need for fall protection for the ironworkers rigging loads inside of the rail cars against 24590-WTP-GPP-SIND-027B\_0, *Fall Prevention and Protection*. Ironworkers were working at elevated levels while rigging rebar loads in the Marshalling area. Provisions were made within the above referenced procedure for work without fall protection while off-loading float trailers-an analogous situation. The Contractor evaluated the operation and subsequently initiated

fall protection for workers when entering and existing the rail cars. The inspectors determined the Contractor acceptably implemented the above referenced procedure.

- The inspectors noted the instability of two stacks of equipment and parts within the warehouse. Some of the stacks were leaning out into the walkways and were being kept upright solely by the shrink plastic wrapping. The inspector suggested the Contractor re-configure the stacks into a more stable and upright mode. The Contractor informed the inspectors the subject stacks had subsequently been re-configured.

### **1.7.3 Conclusions**

Properly trained and motivated personnel and infrastructure were in place and functioning to provide a sound equipment safety program for construction operations. The additional level of inspection and assessment rigor, practiced in the Contractor's Hoisting and Rigging activities, demonstrated a recognizable method to enhance construction accident prevention. The Contractor's powered industrial truck and vehicle safety programs and implementation acceptably met the requirements of ORP M 440.1-2.

## **1.8 Observation of a Construction Emergency Preparedness Drill (ITP I-160)**

The OSR reviewed the construction *Emergency Management Program* and *Emergency Action Plan*, and documented this review in inspection report IR-01-004, dated 10/23/01. Appendix 7, *Drills*, of the *Emergency Action Program*, required the Contractor to perform protective action and tabletop drills as necessary. On March 28, 2002, the Contractor conducted its first drill to exercise the construction staff's ability to safely evacuate and account for construction workers during a simulated site evacuation alarm.

### **1.8.1 Inspection Scope**

The inspectors reviewed the Contractor's *Emergency Action Program*, and *Emergency Action Plan*, and observed the construction site evacuation drill, conducted on March 28, to assess the Contractor's ability to implement the emergency preparedness procedures.

### **1.8.2 Observations and Assessments**

In preparation for the March 28, 2002, construction emergency preparedness drill, the inspectors reviewed:

- 24590-WTP-GPP-SIND-019, *Emergency Management Program*, Revision 1, September 27, 2001
- 24590-WTP-GPP-SIND-003, *Emergency Action Plan*, Revision 1, September 27, 2001.

The *Emergency Management Program (Program)* was prepared by the Contractor to meet the Contract requirement to develop an emergency response plan compliant with Hanford Emergency Management Plan, DOE/RL-94-02. The *Emergency Action Plan (Plan)* was an implementing procedure that included as appendices, emergency response organization (ERO) position specific instruction.

At the current stage of construction, the WTP construction facility was designated an administrative facility in terms of emergency response requirements, as defined in DOE/RL-94-02. As a result, site management and staff emergency response activities were limited mostly to protective actions, such as take cover and evacuation, resulting from potential events outside the WTP boundary, and some less significant event responses, such as fires, natural hazards, and security events. Construction staff was not required to take direct actions to mitigate these type events, but rather notify the applicable Hanford emergency responders, and standby to support these responders if requested.

The *Emergency Management Program* specified only a few emergency response organization (ERO) positions for the current state of construction. They include a Project Emergency Director, Accountability Aids, and Staging Area Managers. During the March 28 drill, staff filled all of these positions. The Drill was pre-announced and 12 onsite construction workers were exempted from participation due to critical ongoing work.

The primary function for the drill was to exercise the Contractor's ability to evacuate the site and account for all staff within 30 minutes. The Drill began with the activation of the alarm system at 9:50 a.m. However, the siren did not function as intended. Rather than a site evacuation alarm and Public Announce (PA) indicating a drill was ongoing, no alarm was heard. Instead, an announce over the PA system informed personnel of the need to take cover. A statement that it was a drill did not accompany this announcement. This caused initial confusion, resulting in staff taking cover rather than evacuating. This notification error was subsequently corrected, and by 9:54 a.m., the correct message was broadcasted over the PA system. The alarm never operated correctly. The ERO was observed to activate and promptly initiate evacuation procedures. Construction workers left their work locations and proceeded to the prearranged staging areas and accountability aids performed sweeps of the construction areas as required by procedures. Staging area managers reported accountability information to the project emergency director, and 100% accountability was verified using a combination of electronic access accountability records, followed by verification of accountability of individuals not accounted for via the electronic method, within the 30 minute goal established in the emergency action plan.

At the completion of the drill, the Contractor initiated an immediate post drill critique. ERO members, drill evaluators, and others were provided an opportunity to discuss observations and potential lessons learned. Many good observations were discussed and several lessons learned were raised. On April 15, 2002, the Contractor submitted to the Office of River Protection a copy of the *Emergency Preparedness Post-Drill Critique Report*, CCN: 030467. The inspectors reviewed the critique report and verified that significant observations and lessons learned were captured in the report. The report documented the siren failure as Corrective Action Report 24590-WTP-CAR-QA-02-071, dated 4/8/02.

Maintenance and activation of the WTP siren fall under the jurisdiction of Flour Hanford. Flour Hanford emergency preparedness staff were notified of the failure and asked to take immediate action to address the failure of the siren to operate when activated by the Patrol Operation Center. Later on the day of the drill, Flour Hanford notified the Contractor the failure was due to a programming error and was being addressed that day. On April 18, 2002, Flour Hanford successfully tested the siren system at the WTP construction site.

### **1.8.3 Conclusions**

The Contractor successfully conducted an emergency preparedness evacuation drill at the WTP construction site. Emergency Response Organization staff performed well and worker accountability was achieved within 30 minutes of initiation of the evacuation alarm. The post drill critique was thorough and the critique report captured significant issues and lessons learned.

## **1.9 Adequacy and Effectiveness of Implementation of the RCP Implementing Procedures to Ensure Radiological Safety (ITP I-140)**

During the inspection period, the Contractor made use of subcontractors to perform radiography work for non-destructive examination (NDE) of welds. The inspectors reviewed selected portions of the subcontractor's procedures and their implementation to assure compliance with the Contract and authorization basis documents (i.e., the Radiation Protection Plan (RPP)) and to assess the adequacy of worker radiological safety. Specifically, the inspectors assessed the adequacy of the Contractor/subcontractor actions to implement Radiological Control Implementing Procedures during radiography at the WTP construction site. The inspection did not include examination of the film produced from the radiography activities.

### **1.9.1 Inspection Scope**

The inspectors reviewed the subcontractor's Radiological Control Procedures (RCP) and observed performance of radiation safety activities during radiography conducted on March 21, 2002, at the construction site.

### **1.9.2 Observations and Assessments**

The inspectors reviewed select sections of the radiography subcontractor's *Radiation Manual Operating & Emergency Procedures*, specific to performance of radiographic activities and verified the manual addressed Contractor RPP requirements and the subcontractor was complying with radiation safety requirements during radiography of 7 welds on an 8-inch air line at the construction site. Specifically, the inspectors observed the two radiographers were wearing appropriate film badges, rate alarms, and pocket dosimeters. Both Geiger-Müller radiation survey instruments had calibration stickers indicating the instruments were calibrated and the next calibration was due May 5, 2002, (i.e., 3 months after the instrument had been calibrated). The inspectors observed posting of the area around the radiography site. The

radiographers monitored for radiation around the site and maintained control over the radiography source. One of the radiographers remained in position outside of the perimeter to permit continuous surveillance of the radiation area and to prevent unauthorized entry into the area. The inspectors observed the radiographer filling out the required "Radiation Survey Report." The radiographic exposure device was inspected per the appropriated procedure. Current copies of the State Radioactive Material Licenses for Washington and Oregon were observed at the site during radiography.

### **1.9.3 Conclusions**

Based on limited review of the procedure and radiography activities, the subcontractor had implemented appropriate written and approved procedures for performing radiography that met the Contractor's RPP requirements.

### **1.10 Adequacy of Closure of Inspection Items (Inspection Administrative Procedures (IAP) A-105 and A-106)**

The following occurrence report was reviewed to determine if it could be closed. The inspectors reviewed the Contractor's description of the occurrence, the corrective actions documented in the occurrence report, and other information provided. The inspectors verified by work observation, records review, and other means as appropriate, the corrective actions stated in the occurrence report were appropriately completed.

**1.10.1 (Closed 02-002-INR)** Occurrence Report No. RP--BNRP-RPPWTP-2002-0002, *Damage to 12,000 Gallon South Water Stand Tower*. On February 4, 2002, the Contractor notified the OSR of a reportable Occurrence regarding the collapse and damage of an elevated water tank located on the south end of the construction site. Shortly after 0845 a.m., and just after the collapse, the Contractor isolated the system and the incident scene and began instituting necessary administrative controls to switch all water tank fill operations to another elevated water tank on the North side of the site. The Contractor entered this occurrence report in the DOE Occurrence Report Processing System (ORPS) at 16:31(MTZ), February 4, 2002.

The South elevated steel water tank and tower were used to fill large water haulage vehicles, which spray water for dust control and soil compaction. The elevated tank was filled with raw untreated water. A float valve controlled the water level, inside the tank. The float valve was designed to stop the inlet water supply when the water reaches a predetermined level within the tank-very similar to the situation in many household toilets.

On February 2, 2002, a site security guard noted the tank was overflowing over the top and the guard attempted to call Contractor management. However, an equipment operator learned of the situation and promptly turned off the manifold valve, which was connected to the main raw water supply, at ground level near the tank. Upon investigation, it was determined the cause for the overflow and eventual tank collapse was a faulty float valve. A particle in the raw water caused the valve to fail. The excess water, flowing down onto the base (earth) of the tank, eroded the foundation for the tank supports and the tank eventually fell.

Some Interim Administrative and engineering controls were initiated at the functional North tank. Those controls consisted of manually shutting off the feed valve to the fill line to the tank in between fill cycles, and cribbing the earthen foundation and covering it with sloped plastic sheeting. The inspectors noted those controls were in effect on February 5, 2002. The inspectors reviewed the drawings and specifications for a movable reinforced concrete base for the tank support.

The Contractor committed to the following corrective actions to prevent recurrence of the accident. *"Construct an approved foundation to support the new South water tower stand and all future water tower stands. Such design should include provisions to facilitate water runoff surrounding the foundation to prevent soil erosion."*

On March 4, 2002, the inspectors examined the corrective actions taken by the Contractor for the protection of the new South tank. By inspection of the finished work, the inspectors determined the Contractor had satisfied the above stated commitment. The new South tank was supported on three six-inch reinforced concrete slabs butted together and temporarily fixed with a sealant. The concrete bases were placed on top of a compacted bed of crushed gravel. The ground was sloped away from the foundation in all directions and further protected by plastic sheeting. The plastic sheeting was covered with several inches of crushed rock.

Based upon the above, this occurrence report is closed.

## **2.0 EXIT MEETING SUMMARY**

The inspectors presented preliminary inspection results to members of Contractor management at an exit meeting on April 11, 2002. The Contractor acknowledged the observations and conclusions. The inspectors asked the Contractor whether any materials examined during the inspection should be considered limited rights data. The Contractor stated no limited rights data were examined during the inspection.

## **3.0 REPORT BACKGROUND INFORMATION**

### **3.1 Partial List of Persons Contacted**

R. Naventi, Project Manager  
J. Betts, Deputy Project Manager  
D. Klein, Nuclear Safety Manager  
M. Perks, Environmental Safety and Health (ES&H) Manager  
S. Henry, ES&H Radiation Safety Lead  
T. Meagher, Industrial Safety Manager  
B. Spezialetti, ES&H Regulatory Safety  
M. Ensminger, Quality Control Supervisor  
R. Amos, Project Field Engineering Manager  
W. Clements, Site Construction Manager  
D. Neal, QA Engineer

C. Cerda, Civil Field Engineer  
 G. Shell, QA Manager  
 E. Smith, Safety Program Engineer  
 B. Niemi, Safety Program Engineer  
 J. Gorski, Senior Project Materials Supervisor  
 G. Kump, Piping Field Engineer  
 S. Horn, CS&A BOF Supervisor  
 R. Jorisen, HLW Concrete Design Lead  
 P. Radhakrishnan, Senior Structural Engineer  
 R. Mejiano, Field Test Engineer

### **3.2 List of Inspection Procedures Used**

Inspection Administrative Procedure A-105, "Inspection Performance"

Inspection Administrative Procedure A-106, "Verification of Corrective Actions"

Inspection Technical Procedure I-112, "Geotechnical/Foundations Inspection"

Inspection Technical Procedure I-113, "Structural Concrete Inspection"

Inspection Technical Procedure I-135, "Readiness for Construction Inspection"

Inspection Technical Procedure I-137, "Inspection of Fire Protection System Construction"

Inspection Technical Procedure I-138, "Inspection of Fire Protection System Inspection, Testing, and Maintenance"

Inspection Technical Procedure I-140, "Radiological Controls Programmatic Assessment"

Inspection Technical Procedure I-160, "Industrial Health and Safety Program Inspection"

### **3.3 List of Items Opened, Closed, and Discussed**

#### Opened

IR-02-004-01-IFI	Inspector Follow-up Item	Evaluate the thoroughness of the Contractor's initiative to ensure ITS concrete technical specifications, construction procedures, and work packages address requirements. (Section 1.3.2)
IR-02-004-02-IFI	Inspection Follow-up Item	Construction Superintendents not required to read or be trained on applicable technical specification. (Section 1.6.2)

IR-02-004-03-FIN	Finding	Firewater bolted joint accessories were not coated as required by NFPA 24 per SRD, Safety Criterion 4.5-17. (Section 1.6.2)
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Closed

02-002-INR	Incident Notification Report	Occurrence Report RP--BNRP-RPPWTP-2002-0002, "Damage to 12,000 Gallon South Water Stand Tower." (Section 1.10.1)
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Discussed

None

**3.4 List of Acronyms**

ASTM	American Society for Testing and Materials
ACI	American Concrete Institute
BOF	Balance of Facilities
BNI	Bechtel National, Inc.
CAR	Corrective Action Request
DOE	U.S. Department of Energy
FIN	Finding
GPS	Global Positioning System
HLW	High Level Waste
IAP	Inspection Administrative Procedure
IFI	Inspection Follow-up Item
INR	incident notification report
IR	Inspection Report
ITP	Inspection Technical Procedure
ITS	important-to-safety
JHA	Job Hazard Analysis
LAW	Low Activity Waste
LCAR	Limited Construction Authorization Request
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
M&TE	Measuring and Test Equipment
NFPA	National Fire Protection Association
ORP	Office of River Protection
ORPS	Occurrence Report Processing System
OSR	Office of Safety Regulation
PDC	Project Document Control
PEL	permissible exposure levels
PPE	personal protection equipment
PT	Pretreatment
QA	Quality Assurance

QAM	Quality Assurance Manual
QAP	Quality Assurance Plan
QC	Quality Control
RPP	Radiation Protection Program
RPP-WTP	River Protection Project – Waste Treatment Plant
STARRT	Safety Task Analysis Risk Reduction Talk
WDOH	Washington State Department of Health